

Appendix A

Abbreviations and Acronyms

a	Local surface/volume ratio
AD	Alveolar duct
AH ₂	Ascorbic acid
AHSMOG	Adventist Health Smog
AIRS	Aerometric Information Retrieval System (U.S. Environmental Protection Agency)
AM	Alveolar macrophage
AMI	Asthma medication index
ANCOVA	Analysis of covariance
AOD	Airway obstructive disease
AR	Autoregressive
ARB	Air Resources Board (California)
ATP	Adenosine triphosphate
BADJ	Bronchiole-alveolar duct junction
BAL	Bronchoalveolar lavage
BF	Black female
BHPN	N-bis (2-hydroxypropyl) nitrosamine
bkg	Background
BM	Black male
bpm	Breaths per minute
BrdU	Bromodeoxyuridine
BS	Black smoke
BSA	Body surface area
BW	Body weight
C	Concentration
C3 _a	Complement protein fragment
CA	Clean air
CAR	Centriacinar region
CC10	Clara cell 10KD protein

Cdyn	Dynamic compliance
CE	Continuous exercise
CI	Confidence interval
CIU	Cumulative methacholine inhalation unit
CL	Confidence limit
CO	Carbon monoxide
CO ₂	Carbon dioxide
CoH	Coefficient of haze
ConA	Concanavalin A
COPD	Chronic obstructive pulmonary disease
CORD	Chronic obstructive respiratory disease
C _{st}	Static compliance
C × T	Concentration times duration of exposure
CTD	Connective tissue disorders
C _w	Chest wall compliance
DAAS	Distal airways and alveolar surface fraction
DEN	Dimethylnitrosamine
DHLNL	Dehydrodihydroxylysinoornithine
DL _{CO}	Diffusing capacity for carbon monoxide
DNA	Deoxyribonucleic acid
DR	Disulfide reductase
DTPA	Diethylenetriaminepentaacetate
DW	Durbin-Watson statistic
Δ	Mean change in a variable
EEG	Electroencephalogram
EES	Exposure event sequence
EPA	U.S. Environmental Protection Agency
EPR	Electron paramagnetic resonance (spectroscopy)
ER	Emergency room
ERV	Expiratory reserve volume
ESC	Epithelial secretory cell
EVR	Equivalent ventilation rate
f	Frequency of breathing
F	Female
F344	Fischer 344
FA	Filtered air

Fc	Antigen-antibody receptor
f_{cnt}	Control breathing frequency
FEF	Forced expiratory flow
$\text{FEF}_{25-75\%}$	Forced expiratory flow between 25 and 75 % of vital capacity
Fe_2O_3	Ferric oxide
$\text{Fe}_2(\text{SO}_4)_3$	Iron sulfate
$\text{FEV}_{0.5}$	Forced expiratory volume in 0.5 s
$\text{FEV}_{0.75}$	Forced expiratory volume in 0.75 s
FEV_1	Forced expiratory volume in 1 s
FEV_3	Forced expiratory volume in 3 s
F_{lrn}	Uptake efficiency of the lower respiratory tract
FP	Fine particle
f_{O_3}	Ozone-altered breathing frequency
FPL55712	Leukotriene D ₄ antagonist
FRC	Functional residual capacity
F_t	Total respiratory tract ozone uptake efficiency
F_{urt}	Uptake efficiency of the upper respiratory tract
FVC	Forced vital capacity
GDT	Glutathione-disulfide transhydrogenase
G6PD	Glucose-6-phosphate dehydrogenase
GR	Glutathione reductase
GSH	Glutathione
GSHPx	Glutathione peroxidase
GST	Glutathione-S-transferase
H^+	Hydrogen ion
HC	Hydrocarbon
HCHO	Formaldehyde
HEI	Health Effects Institute
HLNL	Hydroxylysinonorleucine
HMV	Half-hour mean value
HNO_3	Nitric acid
H_2O	Water
H_2O_2	Hydrogen peroxide
HR	Heart rate
HR_{max}	Maximum heart rate
H_2SO_4	Sulfuric acid

IC	Inspiratory capacity
ICAM	Intracellular adhesion molecule
ICD	Nicotinamide adenine diphosphate-specific isocitrate dehydrogenase
IE	Intermittent exercise
Ig	Immunoglobulin (IgA, IgE, IgG, IgM ⁺)
IL	Interleukin (IL-1, IL-6, IL-8)
Inf	Inflammation
ip	Intraperitoneal
IP	Inhalable particles
IPF	Idiopathic pulmonary fibrosis
IU	International Units
iv	Intravenous
K	Mass transfer coefficient
KI	Potassium iodide
LDH	Lactate dehydrogenase
LM	Light microscopy
LOEL	Lowest-observed-effect level
LRT	Lower respiratory tract
LT	Leukotriene (LTB ₄ , LTC ₄ , LTD ₄ , LTE ₄)
☐	Ozone uptake efficiency
M	Male
M	Oral (breathing)
MAP	Mean arterial blood pressure
MC	Methacholine challenge
MEFV	Maximum expiratory flow volume
MLN	Mediastinal lymph node
MMAD	Mass median aerodynamic diameter
MMEF	Maximum mid-expiratory flow
MNNG	<i>N</i> -methyl- <i>N</i> nitro- <i>N</i> -nitrosoguanidine
MnSO ₄	Manganese sulfate
mRNA	Messenger ribonucleic acid
MVV	Maximum voluntary ventilation
n	Number
N	Nasal (breathing)
☐N ₂	Fractional concentration of nitrogen in expired alveolar gas (nitrogen washout)

NA	Not available
N/A	Not applicable
NAAQS	National Ambient Air Quality Standards
NaCl	Sodium chloride
NADH	Reduced nicotinamide adenine dinucleotide
NADPH	Reduced nicotinamide adenine dinucleotide phosphate
NADPH-CR	Cytochrome c reductase pertaining to nicotinamide adenine dinucleotide phosphate activity
NCI	National Cancer Institute
NEP	Neutral endopeptidase
NH ₄ ⁺	Ammonium ion
NHANES	National Health and Nutrition Examination Survey
(NH ₄) ₂ SO ₄	Ammonium sulfate
NIH	National Institutes of Health
NK	Natural killer
NL	Nasal lavage
NNK	4-(N-methyl-N-nitrosomino)-1-(3-pyridyl)-1-butanone
NO	Nitric oxide
NO ₂	Nitrogen dioxide
NO ₃	Nitrate
NO _x	Nitrogen oxides
NP	Nasopharynx
NPSH	Nonprotein sulphydryl
NS	Nonsmoker
N.S.	Not statistically significant
NTP	National Toxicology Program
NZW	New Zealand White
O ₃	Ozone
¹⁸ O	A stable isotope of oxygen
¹⁸ O ₂	¹⁸ O-labeled oxygen
¹⁸ O ₃	¹⁸ O-labeled ozone
OR	Odds ratio
OX (10)	Number of hours above oxidant threshold of 10 pphm
O _x (KI)	Photochemical oxidants measured by the potassium iodide method
OZ (10)	Number of hours above 10-pphm ozone
OZ (12)	Number of hours above 12-pphm ozone

p	Probability
PA	Proximal airways fraction
PAH	Polycyclic aromatic hydrocarbons
PAN	Peroxyacetyl nitrate
PAR	Proximal alveolar region
PC ₁₅	Provocative concentration that produces a 15% decrease in forced expiratory volume in 1 s
PC ₂₀	Provocative concentration that produces a 20% decrease in forced expiratory volume in 1 s
PC _{100SRaw}	Provocative concentration required to increase specific airway resistance by 100%
PD ₂₀	Provocative dose that produces a 20% decrease in forced expiratory volume in 1 s
PD ₁₀₀	Provocative dose that produces a 100% decrease in forced expiratory volume in 1 s
PDI	Pain on deep inspiration
PE	Postexposure
PEFR	Peak expiratory flow rate
PG	Prostaglandin (PGD ₂ , PGE, PGE ₁ , PGE ₂ , PGF _{1α} , PGF _{2α})
6PGD	6-Phosphogluconate dehydrogenase
pH	Hydrogen ion concentration
PHA	Phytohemagglutinin
PM	Particulate matter
PM _{2.5}	Particulate matter of mass median aerodynamic diameter $\leq 2.5 \text{ }\mu\text{m}$
PM ₁₀	Particulate matter of mass median aerodynamic diameter $\leq 10 \text{ }\mu\text{m}$
PM ₁₅	Particulate matter of mass median aerodynamic diameter $\leq 15 \text{ }\mu\text{m}$
PMN	Polymorphonuclear leukocyte (also called neutrophil)
pNEM/O ₃	Probabilistic National Ambient Air Quality Standards Exposure Model for Ozone
PNU	Protein nitrogen unit
p.r.n.	As needed (<i>pro re nata</i>)
PUFA	Polyunsaturated fatty acid
r	Linear regression correlation coefficient
r ²	Correlation coefficient
R	Intraclass correlation coefficient
R ²	Multiple correlation coefficient

R _{aw}	Airway resistance
RB	Respiratory bronchiole
RBC	Red blood cell
RH	Relative humidity
R _L	Total pulmonary resistance
RNA	Ribonucleic acid
RR	Relative risk
RSP	Respirable suspended particulate
RT	Respiratory tract
R _T	Total respiratory resistance
RV	Residual volume
S	Smoker
SAROAD	Storage and Retrieval of Aerometric Data (U.S. Environmental Protection Agency) centralized database; superseded by Aerometric Information Retrieval System [AIRS])
SB	Shortness of breath
sc	Subcutaneously
SCE	Sister chromatid exchange
SD	Standard deviation
S-D	Sprague-Dawley
SE	Standard error
SEM	Scanning electron microscopy
SEM	Standard error of the mean
SG _{aw}	Specific airway conductance
SH	Sulphydryl
SHAPE	Simulation of Human Activity and Pollutant Exposure
SHE	Syrian hamster embryo
SMG	Small-mucous-granule
SO ₂	Sulfur dioxide
SO ₄	Sulfate
SO ₄ ⁼	Sulfate ion
SOD	Superoxide dismutase
SR _{aw}	Specific airway resistance
SRBC	Sheep red blood cell
□ _g	Geometric standard deviation
□ ²	Difference in volume variance between expired and inspired gas bolus

T	Time (duration of exposure)
T °C	Temperature (degrees)
T _{co}	Core temperature
TB	Terminal bronchioles
TBARS	Thiobarbituric acid reactive substance
^{99m} Tc-DTPA	Radiolabeled diethylene triamine pentaacetic acid
^{99m} Tc-Fe ₂ O ₃	Radiolabeled ferric oxide
Tdb	Dry bulb temperature
TEM	Transmission electron microscopy
THC	Total hydrocarbon content
THI	Temperature-humidity index
TLC	Total lung capacity
TNF	Tumor necrosis factor
TSP	Total suspended particulate
TSP (200)	Number of hours above a total suspended particulate concentration of 200 µg/m ³
TX	Thromboxane (A ₂ , B ₂)
UCLA	University of California at Los Angeles
UFA	Unsaturated fatty acids
URT	Upper respiratory tract
UV	Ultraviolet
V	Volume
V _B	Breakthrough volume
VC	Vital capacity
V _p	Penetration volume
V _s	Volume per surface area
V _T	Tidal volume
V _{Tmax}	Maximum tidal volume
V _v	Volume fraction
V _{25%vc}	Lung volume at 25% of the vital capacity
V _{50%vc}	Lung volume at 50% of the vital capacity
dot{V} _A	Alveolar ventilation
dot{V}_E	Minute ventilation; expired volume per minute
dot{V}_{Emax}	Maximum minute ventilation
dot{V}_I	Average inspiratory flow
dot{V}_{max25%}	Maximum expiratory flow at 25% of the vital capacity

$\dot{V}_{\text{max}50\%}$	Maximum expiratory flow at 50% of the vital capacity
$\dot{V}_{\text{max}75\%}$	Maximum expiratory flow at 75% of the vital capacity
$\dot{V}_{\text{max}50\% \text{TLC}}$	Maximum expiratory flow at 50% of the total lung capacity
$\dot{V}\text{O}_2$	Oxygen uptake by the body
$\dot{V}\text{O}_{2\text{max}}$	Maximal oxygen uptake (maximal aerobic capacity)
W	Watt
WBGT	Wet bulb globe temperature
WF	White female
WM	White male
ZnO	Zinc oxide